

Quantum Mechanics & Quantum Computation

$$\frac{1}{\sqrt{2}}|\text{cat sitting}\rangle + \frac{1}{\sqrt{2}}|\text{cat lying}\rangle$$

Welcome to the
QM&QC Class

Quantum Computation

$$\frac{1}{\sqrt{2}}|\text{cat sitting}\rangle + \frac{1}{\sqrt{2}}|\text{cat jumping}\rangle$$

Course Structure

- 8 weeks + final
- Videos + quizzes
- 7 problem sets
 - 70% of score
 - Multiple attempts
 - Optional long questions
- Final
 - 30% of score

Background

- No prior knowledge of quantum mechanics
- Linear Algebra
 - Vectors & matrices
 - Inner products
 - Eigenvalues & eigenvectors
- Basic computer science
 - Big-Oh notation
 - Elementary algorithms
 - Counting steps

Other Issues

- Honor code
- Course notes
- Time management (5-12 hours/week)
- Discussion forum and study groups

What you will learn

- Exponential power of quantum systems
 - What is the source of this power?
 - How to use it to design quantum algorithms?
 - What are its limitations?
- Simple and conceptual intro to basic quantum mechanics.